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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/704,745      | 11/03/2000  | Young-Wan Kwon       | 1607-0248P          | 4999             |

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Birch Stewart Kolasch & Birch LLP  
P O Box 747  
Falls Church, VA 22040-0747

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| EXAMINER |
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DUONG, THOI V

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| ART UNIT | PAPER NUMBER |
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2871

DATE MAILED: 01/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/704,745

Applicant(s)

KWON ET AL.

Examiner

Thoi V Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 October 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This office action is in response to the Amendment, Paper No. 8, filed October 18, 2002.

Accordingly, claims 1, 3, 7, 8, 10 and 15 were amended, and new claims 16-23 were added. Currently, claims 1-23 are pending in this application.

***Claim Objections***

2. Claim 8 is objected to because of the following informalities: in line 9 of the claim, "the CLC polarizer" should be --the CLC color filter--. Appropriate correction is required.
3. Claim 15 recites the limitation "the quarter-wave film" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. Claim 15 should be dependent on claim 13 instead claim 10.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hall (USPN 5,841,494) in view of Kuo (USPN 6,144,430).

As shown in Fig. 6, Hall discloses a liquid crystal display (LCD) usable with a back light source 11 supplying light, comprising:

a cholesteric liquid crystal (CLC) polarizer 17 to transmit one of left-circularly polarized light and right-circularly polarized light from the back light source, and to reflect other light not transmitted;

a lower substrate 6 on which a CLC color filter layer 20 is formed to transmit the circularly polarized light from the CLC polarizer having certain wavelengths and reflects other light not transmitted (col. 7, lines 18-41);

a liquid crystal layer 4 to selectively revolve a polarized direction of the circularly polarized light from the CLC color filter layer (col. 7, lines 18-41); and

an upper substrate over the liquid crystal layer.

Hall discloses a LCD that is basically the same as that recited in claim 1 except for a hologram diffuser and a linear polarizing transformer disposed on the upper substrate. As shown in Fig. 1, Kuo discloses a LCD comprising an upper substrate 106 over a liquid crystal layer 109, a diffuser 103, and a linear polarizing transformer including a linear polarizer 101 and a quarter-wave 102 formed on top of the upper substrate. As shown in Fig. 2, the diffuser (as 203) diffuses the revolved circularly and polarized light from the liquid crystal layer and the linear polarizing transformer (as 201, 202) transforms the diffused circularly polarized light from the hologram diffuser into linearly polarized light (col. 2, line 55 through col. 3, line 20). Kuo also discloses that a hologram diffuser can be used for a diffuser to obtain a maximum contrast ratio and a maximum brightness at the same viewing polar angle (col. 2, lines 1-7). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Hall with the teaching of Kuo by forming on the upper

substrate a hologram diffuser to diffuse the revolved circularly polarized light from the liquid crystal layer and a linear polarizing transformer to transform the diffused circularly polarized light from the hologram diffuser into linearly polarized light so as to obtain a maximum contrast ratio and a maximum brightness at the same viewing polar angle for the display.

6. Claims 3-6, 8, 19, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tedesco (USPN 5,418,631) in view of Davis et al. (USPN 5,822,029) and Abileah et al. (USPN 5,629,784).

As shown in Fig. 3, Tedesco discloses a LCD usable with a back light source 16 supplying light, comprising:

a cholesteric liquid crystal (CLC) polarizer 102 to transmit one of left-circularly polarized light and right- circularly polarized light from the back light source, and to reflect other light not transmitted (col. 4, lines 42-53);

a linear polarizing transformer including a first linear polarizer 124 and a quarter-wave film 122 to transform the circularly polarized light from the CLC polarizer into linearly- polarized light (col. 4, lines 62-68);

a liquid crystal layer 126 above the first linear polarizer and to selectively transmit the linearly-polarized light.

Tedesco discloses a LCD that is basically the same as that recited in claims 3-6, 8, 19, 20 and 23 except for a CLC color filter layer and a hologram diffuser. As shown in Fig. 1, Davis discloses an illumination system comprising a circular polarizer which transmits the circularly polarized light from a light source 10 and a CFC color filter 18

which transmits the circularly polarized light from the circular polarizer having certain wavelengths and reflects other light not transmitted (col. 2, line 38 through col. 3, line 6). Meanwhile, Abileah discloses in Fig. 3 a LCD usable with a backlight source 29, comprising a collimating member 23 to collimate the light supplied by the backlight source, a first (back) linear polarizer 3, a liquid crystal layer 9 above the first linear polarizer to selectively transmit the linearly-polarized light, and an upper substrate 13 over the liquid crystal layer having a hologram diffuser 21 for diffusing the linearly-polarized light from the liquid crystal layer, and a second (front) linear polarizer 15 to transform the diffused linearly polarized light from the hologram diffuser into linearly polarized light. A planarization layer 35 to planarize the hologram diffuser is illustrated in Fig. 2.

As to the product-by-process limitation "hardened by light irradiation" of claim 6, it has been recognized that "Even through product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process". *In re Thorpe*, 227 USPQ 964,966 (Fed. Cir. 1985). See also MPEP 2113.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Tedesco with the teachings of David and Abileah by forming a CLC color filter between the CLC polarizer and the first linear

polarizer and a hologram diffuser on top of the upper substrate so as to obtain high contrast ratio images.

7. Claims 7 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tedesco (USPN 5,418,631) in view of Abileah et al. (USPN 5,629,784).

As shown in Fig. 3, Tedesco discloses a LCD usable with a back light source 16 supplying light, comprising:

a cholesteric liquid crystal (CLC) polarizer 102 to transmit one of left-circularly polarized light and right-circularly polarized light from the back light source, and to reflect other light not transmitted (col. 4, lines 42-53);

a quarter-wave film 122 to transform the circularly polarized light from the CLC polarizer into linearly-polarized light (col. 4, lines 62-68);

a linear polarizer 124 above the quarter film;

a lower substrate 25 above the linear polarizer;

a liquid crystal layer 126 above the lower substrate; and

an upper substrate 24 over the liquid crystal layer.

Tedesco discloses a LCD that is basically the same as that recited in claims 7 and 22 except for a hologram diffuser to diffuse the linearly- polarized light from the liquid crystal layer. As shown in Fig. 2, Abileah discloses a LCD comprising a first (back) linear polarizer 3 below a lower substrate 5; a liquid crystal layer 9 above the first linear polarizer to selectively transmit the linearly-polarized light; an upper substrate 13 over the liquid crystal layer having a hologram diffuser 21 to diffuse the linearly- polarized light from the liquid crystal layer and a planarization layer 35 disposed on the hologram

diffuser to planarize the hologram diffuser; and a collimating member 23 disposed below the lower substrate to collimate the light from a back light source 29.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Tedesco with the teaching of Abileah by forming a hologram diffuser to diffuse the linearly- polarized light from the liquid crystal layer so as to obtain high contrast ratio images.

8. Claims 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hall (USPN 5,841,494) in view of Kuo (USPN 6,144,430) as applied to claim 1 above and further in view of Abileah et al. (USPN 5,629,784), Davis et al. (USPN 5,822,029) and Kaneko (USPN 6,295,108 B1).

With respect to claims 10, 11, 13, 14 and 16-18, the LCD of Hall as modified in view of Kuo above includes all that is recited in claims 10, 11, 13, 14 and 16-18 except for a collimating member and a reflecting plate. As shown in Fig. 2, Alibeah discloses a back light assembly 2 for using with a LCD display, comprising a back light 29, a reflecting plate 27 and a collimating member 23 to collimate the light supplied by the back light. Abileah also discloses a planarization layer 35 disposed on a hologram diffuser 21; this layer is formed of glass sheet and may be considered as another upper substrate of the display. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD of Hall with the teaching of Alibeah by employing a back light assembly comprising a reflecting plate and a collimating member so as to improve illumination intensity and minimize power consumption and thermal inconveniences.



With respect to claim 12, the LCD of Hall as further modified in view of Abileah above includes all that is recited in claim 12 except for an absorbing type color filter layer. As shown in Fig. 2, Davis discloses a color filter 18 which is arranged to absorb light having a wavelength falling outside a predetermined band so as to reduce problems associated with light from outside (col. 4, lines 5-25). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD of Hall with the teaching of Davis by employing an absorbing type color filter layer so as to obtain clearer images for the display.

With respect to claim 15, the LCD of Hall as further modified in view of Abileah above includes all that is recited in claim 15 except for a compensating film disposed between the quarter-wave film and the upper linear polarizer to transform light into linearly-polarized light. As shown in Fig. 1, Kaneko discloses a LCD comprising an upper linear polarizer 8 and a compensating film 13 (quarter-wave film) to transform light into linearly-polarized light. Kaneko also discloses that a plurality of retardation films can be used to obtain more linearly polarized light, providing more favorable colored display (col. 8, lines 59-64). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD of Hall with the teaching of Kaneko by forming a compensating film between the quarter-wave film and the upper linear polarizer so as to improve viewing angle characteristic.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hall (USPN 5,841,494) in view of Kuo (USPN 6,144,430) as applied to claim 1 above and further in view of Kaneko (USPN 6,295,108 B1).

The LCD of Hall as modified in view of Kuo above includes all that is recited in claim 2 except for a compensating film disposed between the quarter-wave film and the upper linear polarizer to transform light into linearly-polarized light. As shown in Fig. 1, Kaneko discloses a LCD comprising an upper linear polarizer 8 and a compensating film 13 (quarter-wave film) to transform light into linearly-polarized light. Kaneko also discloses that a plurality of retardation films can be used to obtain more linearly polarized light, providing more favorable colored display (col. 8, lines 59-64). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD of Hall with the teaching of Kaneko by forming a compensating film between the quarter-wave film and the upper linear polarizer so as to improve viewing angle characteristic.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tedesco (USPN 5,418,631) in view of Abileah et al. (USPN 5,629,784) as applied to claims 7 and 22 above and further in view of Davis et al. (USPN 5,822,029).

The LCD of Hall as further modified in view of Abileah above includes all that is recited in claim 21 except for an absorbing type color filter layer. As shown in Fig. 2, Davis discloses a color filter 18 which is arranged to absorb light having a wavelength falling outside a predetermined band so as to reduce problems associated with light from outside (col. 4, lines 5-25). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the LCD of Hall with the teaching of Davis by employing an absorbing type color filter layer so as to obtain clearer images for the display.

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11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tedesco (USPN 5,418,631) in view of Davis et al. (USPN 5,822,029) and Abileah et al. (USPN 5,629,784) as applied to claims 3-6, 8, 19, 20 and 23 above and further in view of Kondo et al. (USPN 6,198,520 B1).

The LCD of Tedesco as modified in view of Davis and Abileah above includes all that is recited in claim 9 except for a CLC color filter including dichromic acid photoinitiator. Kondo discloses a color LCD wherein a photosensitive resist made from polyvinylalcohol added with dichromic acid to form color filters of R, G, and B (col. 12, lines 27-38). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Tedesco with the teaching of Kondo by forming a CLC color filter including dichromic acid photoinitiator so as to obtain a color display exhibiting a wide angle of visibility.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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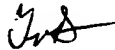
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

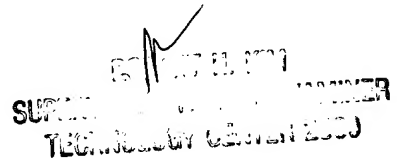
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.

Thoi Duong



12/23/2002



601071171  
SUPERVISOR  
TECHNOLOGY CENTER 2871